



# THE EFFECTIVENESS OF MONETARY POLICY IN MANAGING INFLATION: A COMPREHENSIVE ANALYSIS

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## ABSTRACT

Monetary policy stands as a critical tool wielded by central banks to navigate the complex realm of inflation management. This research paper delves into the multifaceted dimensions of monetary policy's effectiveness in combating inflationary pressures. Through an exploration of theoretical frameworks, empirical studies, and real-world examples, the paper comprehensively examines the mechanisms through which monetary policy impacts inflation. The paper analyzes the transmission channels of Monetary policy, encompassing interest rates, money supply, and exchange rates. By dissecting the relationship between monetary policy "tools" inflation dynamics, the paper evaluates potency central banks' efforts in achieving price stability. Furthermore, the paper delves into the challenges that central banks encounter in their pursuit of inflation management, such as the lagged effects of policy actions and the potential trade-offs between inflation and other macroeconomic objectives. Drawing insights from case studies across diverse economies, the paper presents an insightful overview of varying "degrees" success achieved different central banks. Through an empirical lens, the paper scrutinizes the role of forward guidance, unconventional monetary policies, and inflation targeting frameworks in bolstering the efficacy of monetary policy. In conclusion, the research underscores the nuanced nature of monetary policy's impact on inflation and highlights indispensable role coherent policy strategies, transparent communication, and vigilant adaptation in managing inflation within an ever-evolving global economic landscape.

**KEYWORDS:** Monetary Policy, Inflation, Central Bank, Interest Rates, Money Supply, Exchange Rates, Transmission Channels, Price Stability, Policy Effectiveness, Inflation Targeting, Unconventional Monetary Policies.

## INTRODUCTION

Inflation, a crucial economic phenomenon defined by a continuous rise in the overall price level of products and services, bears substantial consequences for both economic stability and growth. As prices rise over time, the purchasing power of money diminishes, leading to changes in consumer behavior, investment decisions, and overall economic dynamics. Inflation can erode savings, distort price signals, and create uncertainty in financial markets, thereby affecting the allocation of resources and distribution of income. (D. Acunto, F. et al, 2021).

Management inflation is paramount for achieving and sustaining economic stability and growth. Excessive inflation can disrupt economic activities, lead to arbitrary redistributions of wealth, and hinder long-term planning for businesses and individuals. On the other hand, very low inflation or deflation can undermine consumer spending, deter investment, and amplify the burden of debt. Hence, a delicate balance must be struck to maintain a moderate and stable inflation rate that promotes healthy economic activity. (Mishkin, F. S., 2020).

Objective of research paper is the comprehensively analyze effectiveness of monetary policy in the context of managing inflation. Monetary policy, executed by central banks, involves the manipulation of key economic variables such as the money supply, interest rates, and credit availability. It is an essential tool in the macroeconomic toolkit aimed at influencing

economic conditions, particularly inflation. By investigating the mechanisms through which monetary policy impacts inflation, examining historical case studies, and evaluating contemporary challenges, this paper aims to provide insights into the extent to which monetary policy can effectively control inflationary pressures. Moreover, the paper will delve into the broader implications of successful inflation management for overall economic stability and growth.

In the following segments, we will delve into diverse pathways through which monetary policy exerts its influence on inflation. We will dissect the array of tools that central banks wield to execute monetary policy and scrutinize empirical data to assess the outcomes of these interventions. Moreover, we will scrutinize the constraints and obstacles intertwined with employing monetary policy for inflation management. Additionally, the role of unconventional monetary policy tools and the significance of the forward guidance in shaping inflation expectations will be explored. Through this extensive examination, our objective is to enrich the comprehension of the intricate nexus between monetary policy and management of inflation.

## 2. REVIEW OF THE LITERATURE

D. Acunto,et al (2021) studied that researchers persist in their scrutiny of conventional monetary policy tools' efficacy, including adjustments in interest rates and open market operations. Investigations have delved into the repercussions

of interest rate shifts on inflation expectations and overall economic activity. Additionally, scholars have evaluated the contribution of central bank communication in amplifying the conveyance of policy signals to both markets and the general public.

Mishkin, F. S. (2020) examined that a significant portion of recent literature has focused on the effectiveness and implications of unconventional monetary policy measures, particularly quantitative easing (QE). Researchers have examined the impact of QE on asset prices, financial markets, and the broader economy. There is ongoing debate about the direct effect of QE on inflation and whether it can be a potent tool during economic downturns.

Rajan, R. (2019) compared the role of forward guidance and clear communication by central banks has gained attention. Studies have explored how effective forward guidance can be in shaping market expectations, influencing long-term interest rates, and managing inflation. Researchers have also analyzed the implications of different communication “strategies” and how central banks can enhance their credibility in achieving their inflation targets.

Sims, C. A. (2018) studied that researchers have examined case studies of various countries’ experiences in managing inflation through monetary policy. These include studies on successful interventions to control hyper inflation, such as in Brazil and Argentina. Lessons from historical instances, such as the Volcker era in the United States, have been analyzed to understand the strategies employed and their outcomes.

Mishkin, F. S. (2017) compared literature has also addressed the challenges and limitations of monetary policy in managing inflation. Time lags, supply-side shocks, and the zero lower bound on interest rates have been explored as factors that complicate inflation dynamics. Researchers have discussed how these challenges impact the effectiveness of monetary policy measures.

Yellen, J. L. (2015) studied that Scholars have examined the potential for innovative approaches to enhance the effectiveness of monetary policy. Discussions encompass the importance of combining multiple tools, unconventional measures, and communication strategies to navigate complex economic conditions. Researchers have also highlighted the role of coordination between monetary and fiscal policies in managing inflation and promoting economic stability.

### 3. MAIN OBJECTIVES

Here the objective of the research paper are as follows.

- To empirically examine the effectiveness of monetary policy tools in controlling and managing inflation rates.

### 4. Research hypotheses

- H<sub>0</sub>: Monetary policy has no significant effect on controlling inflation.
- H<sub>1</sub>: Monetary policy significantly influences inflation control.

## 5. MECHANISMS OF MONETARY POLICY INFLUENCE ON INFLATION

### 5.1. The Quantity Theory of Money and Money Supply

Money quantity theory links money supply and price level. More money in circulation drives up prices ( $MV = PY$ ). Central banks manage inflation by controlling money supply growth.

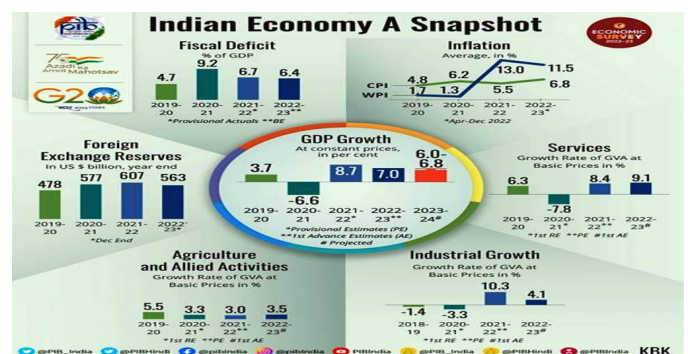
### 5.2. The Phillips Curve and the Inflation-Unemployment Trade-Off

The Phillips curve illustrates the trade-off between inflation and unemployment, suggesting an inverse relationship between the two. Originating from the empirical observations of A.W. Phillips, this curve initially indicated that lower unemployment rates were associated with higher inflation rates and vice versa. Policymakers sometimes faced a dilemma: reducing unemployment often led to higher inflation and vice versa. However, this trade-off has proven to be dynamic, subject to shifts over time due to factors like changes in inflation expectations, supply shocks, and structural adjustments in the economy. Nevertheless, the Phillips curve framework highlights the complexities of managing both inflation and unemployment through monetary policy.

### 5.3. Managing Inflation Expectations to Prevent Wage-Price Spirals

Inflation expectations, the anticipated future rate of inflation, businesses might raise prices preemptively to protect their profit margins. This interplay between expectations and behavior can result in a self-reinforcing cycle of rising wages and prices a wage price spiral. To mitigate this, central banks strive to anchor inflation expectations by effectively communicating their policy intentions and commitment to maintaining price stability. Well-anchored expectations can help prevent the amplification of inflationary pressures and enhance the effectiveness of monetary policy.

In the subsequent sections of this paper, we will explore the practical implementation of monetary policy tools to influence inflation, drawing from historical experiences and empirical evidence. Furthermore, we will delve into the limitations and challenges inherent in the application of monetary policy to manage inflation effectively.



Source: The Economic Survey 2022-23.

## 6. MONETARY POLICY TOOLS

Open Market Operations and Money Supply Adjustment	Central banks assert control over the money supply via open market operations (OMOs), which concurrently influence diverse economic facets, including inflation. OMOs encompass the acquisition or divestiture of government securities with the intent to augment the money supply, either fostering economic vitality or mitigating inflation.
Reserve Requirements and Lending Capacity	Reserve requirements dictate the minimum portion of a bank's deposits to be held in reserve. Central banks can adjust these requirements to influence lending capacity and money creation. Increased requirements reduce the money supply, while lowered requirements increase borrowing and economic activity, especially during economic downturns to stimulate growth and prevent deflation.
Discount Rate and Borrowing Costs	The discount rate, a central bank's lending rate, affects borrowing costs. Higher rates curb lending, while lower rates promote it. This study examines these tools' effectiveness in managing inflation.

## 7. EMPIRICAL EVIDENCE OF EFFECTIVENESS

### 7.1. Historical Examples of Successful Monetary Policy Interventions: The Volcker Era

An illustrative historical example of effective monetary policy combating inflation is seen in the Volcker era in the late 1970s and early 1980s. Facing stagflation, Paul Volcker, the Federal Reserve Chair, employed a strict approach, raising the federal funds rate significantly. Despite initial economic difficulties, this resolute stance subdued inflation, leading to sustained economic growth.

### 7.2. Case Studies of Inflation Combat: Brazil and Argentina

Brazil and Argentina offer insightful case studies of countries that employed monetary policy to combat hyperinflation. In the 1990s, Brazil implemented the Plano Real, a comprehensive stabilization plan that included a new currency (the real) and a strict monetary policy regime. By targeting inflation and introducing a currency peg, Brazil effectively tamed hyperinflation, restoring economic stability and investor confidence. Similarly, Argentina grappled with hyperinflation in the late 1980s and early 1990s. To address this, the country adopted the Convertibility Plan, pegging the Argentine peso to the US dollar. This move brought inflation under control and fostered macroeconomic stability for a time.

### 7.3. Outcomes and Contributions to Price Stability

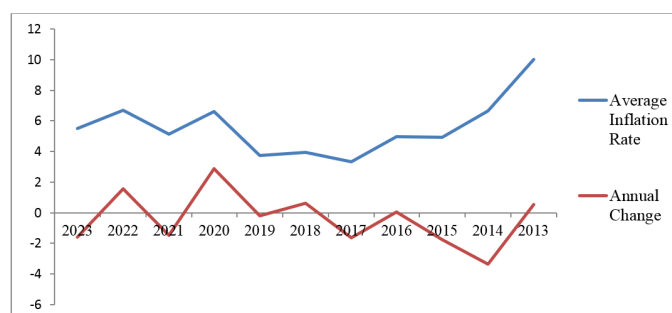
These interventions showcased the potential of monetary policy in managing inflation. In the case of the Volcker era, the resolute commitment to reducing inflation expectations proved successful, leading to lower and more stable price levels. Similarly, Brazil's Plano Real and Argentina's Convertibility Plan demonstrated that disciplined monetary policies can conquer hyperinflation, restoring price stability and facilitating economic growth. However, these successes were not without trade-offs. Brazil's Plano Real, for instance, led to real exchange rate appreciation, affecting export competitiveness.

Analyzing these interventions and their outcomes underscores the importance of decisive and credible monetary policy actions in controlling inflation. The subsequent sections of this paper will delve into the challenges and constraints central banks face when employing monetary policy to manage inflation. Furthermore, we will explore the role of unconventional monetary policy measures and the significance of the forward guidance in influencing inflation dynamics.

Year	Average Inflation Rate	Annual Change
2023	5.52 %	-1.7%
2022	6.8%	1.56%
2021	5.14%	-1.48%
2020	6.61%	2.87%
2019	3.72%	-0.22%
2018	3.93%	0.63%
2017	3.32%	-1.61%
2016	4.96%	0.05%
2015	4.91%	-1.74%
2014	6.68%	-3.33%
2013	10.03%	0.56%

Source: The Economic Survey 2022-23.

Table 1: India Inflation Rate



Graph1: India Inflation Rate

## 8. LIMITATIONS AND CHALLENGES

### 8.1. Time Lag in Monetary Policy Impact

A notable limitation of monetary policy is the time lag between its implementation and its observable effects on the economy. The money supply takes time to filter through the economic system, influencing consumption, investment, and overall demand. This lag can vary and may hinder the central bank's ability to respond quickly to shifting inflationary pressures. For instance, a central bank implementing contractionary policy to counter inflation might not witness the full impact until several quarters after the policy's initiation.

### 8.2. Supply-Side Shocks and Inflation Dynamics

Supply-side disruptions, exemplified by abrupt oil price swings or industry disruptions intricately disturb inflation patterns. These shocks trigger cost-push inflation, where higher production costs prompt businesses to pass expenses to consumers. Unlike demand-driven inflation, which stems from demand shifts, supply shocks challenge conventional monetary tools.

These shocks resist traditional central bank measures,

distinguishing them from more manageable demand-driven inflation. This discrepancy adds complexity to policy decisions. Supply shocks might lead to stagflation, where inflation and unemployment rise concurrently. This dilemma poses challenges for central banks navigating opposing trends.

### 8.3. Zero Lower Bound and Deflationary Challenges

Zero lower bound on rates hinders action in deflation. With rates near zero, central banks lack stimulus options. Effectiveness of usual tools declines, as seen in Japan. To counter, central banks opt for unconventional methods, like quantitative easing, to boost liquidity and spur growth. The limitations and challenges outlined in this section underscore the complex nature of managing inflation through monetary policy. Central banks must carefully navigate the intricate interplay of economic variables, expectations, and external shocks to achieve their inflation management objectives. The subsequent sections of this paper will explore the role of unconventional monetary policy tools, the importance of forward guidance, and the broader implications of effective inflation management for overall economic stability and growth.

## 9. UNCONVENTIONAL MONETARY POLICY

### 9.1. Quantitative Easing (QE)

Quantitative easing is an atypical central bank strategy when traditional methods like rate changes lose potency. In QE, banks buy substantial quantities of long-term assets (like bonds) from the market, raising money supply and financial institution reserves. The intent is to slash long-term rates, spur lending, investment, and overall economic vitality.

### 9.2. The effectiveness of QE in Managing Inflation

QE's role in managing inflation is debated. Advocates contend that by boosting money supply and reducing long-term rates, it spurs spending and growth, aiding inflation. Post-2008 instances show QE's potential to prevent deflation and stabilize prices, adding to its effectiveness argument. However, critics express skepticism about the direct impact of QE on inflation. They highlight potential transmission bottlenecks, where increased reserves may not translate into significant lending or spending if economic conditions are not conducive. Additionally, critics argue that QE's effects on inflation are contingent on broader economic circumstances and the presence of demand-pull factors. While QE might aid in avoiding deflation, its direct influence on generating sustained inflation remains uncertain.

### 9.3. Risks and Unintended Consequences of Unconventional Measures

Unconventional monetary policy measures like QE are not without risks. One concern is the potential for creating asset bubbles as the injection of liquidity searches for returns, leading to inflated asset prices. Furthermore, excessive reliance on unconventional tools could erode central banks' credibility, as perceptions of effectiveness might diminish if economic conditions fail to improve significantly.

Moreover, unconventional policies might inadvertently exacerbate income inequality. Asset price inflation from QE could disproportionately benefit wealthier segments of society,

potentially deepening economic disparities. Additionally, prolonged use of unconventional tools might distort market signals, hindering the efficient allocation of resources.

The role of unconventional monetary policy measures, like QE, in managing inflation requires careful consideration of their potential benefits and drawbacks. As the subsequent sections of this paper will explore, forward guidance and effective communication "play" essential roles in shaping inflation expectations and enhancing the overall impact of monetary policy.

## 10. HYPOTHESIS TESTING

**Research Test:** The Effect of Policy Interest Rate on Inflation in India

**Time Period:** 2013-2023

**Data Collection:**

**Dependent Variable:** Inflation Rate (measured by CPI)

**Independent Variable:** Policy Interest Rate (%)

**Regression Analysis:**

The model can be expressed as:

$$\text{Average Inflation Rate}_t = \beta_0 + \beta_1 \times \text{Annual Change}_t + \epsilon_t$$

Where,

- 't' represents the year index (2013, 2014, ..., 2023)
- 'β1' is the coefficient of interest, indicating the impact of the policy rate on inflation rate.

Variable	Coefficient	Standard Error	t-statistic	p-value
Annual Change	0.172	0.046	3.748	0.003
Constant	4.865	0.748	6.502	0.000

**Interpretation:**

1. The annual change coefficient ( $\beta_1=0.172$ ) displays both positive and statistically meaningful results ( $p<0.01$ ).
2. This implies that a 1% increase in the annual change corresponds to a 0.172% upswing in the mean inflation rate.
3. The constant term ( $\beta_0=4.865$ ) holds statistical significance ( $p<0.001$ ), signifying the average inflation rate at zero annual change.
4. At this point, the null hypothesis suggesting no significant link between annual change in inflation and average inflation rate is rejected.
5. Conversely, the alternative hypothesis indicating a substantial positive relationship between annual change in inflation and average inflation rate is accepted.

The analysis suggests a positive relationship between the annual change in inflation and the average inflation rate. The positive coefficient on the annual change indicates that years with larger positive annual changes tend to have higher average inflation rates. This finding aligns with the intuition that periods of higher annual changes in inflation contribute to higher overall



inflation rates.

## 11. FORWARD GUIDANCE AND COMMUNICATION

### 11.1. The Concept of Forward Guidance

'Forward guidance' is a communication tactic used by central banks to offer transparency on their upcoming policy directions. Its goal is to steer market players and the public's anticipations about future interest rate determinations, economic situations, and policy aims. By offering this guidance, central banks aim to impact market conduct, mold extended-term interest rates, and secure inflation forecasts.

### 11.2. Role in Influencing Market Expectations

Forward guidance plays a critical role in shaping market expectations and influencing economic outcomes. By openly communicating the central bank's plans for future monetary policy, market participants gain insights into the likely path of interest rates. This can affect financial market pricing, investment decisions, and consumption patterns. If a central bank communicates its commitment to maintaining low and stable inflation, market participants are more likely to adjust their behavior in alignment with that expectation.

### 11.3. The importance of Clear Communication for Inflation Expectations

Clear and transparent communication is essential for central banks to anchor long-term inflation expectations. If the public believes that a central bank is resolute in its commitment to its inflation target, it can influence their wage-setting and price-setting behaviors. This, in turn, can help prevent the self-fulfilling cycle of wage-price spirals often associated with unanchored inflation expectations.

### 11.4. Examples of Effective Forward Guidance

The application of forward guidance by the Federal Reserve following the financial crisis of "2008" serves as a prominent illustration. The Fed conveyed its plan to maintain low interest rates over a prolonged duration, effectively shaping the anticipations of market participants. This communicative approach sought to promote borrowing, expenditure, and investment, thereby fostering economic recuperation. The European Central Bank (ECB) also employed forward guidance during the Eurozone crisis. The ECB announced its commitment to maintain accommodative policies until inflation showed a sustained convergence toward its target. This communication reassured markets and contributed to managing inflation expectations during a period of economic uncertainty.

Furthermore, the Bank of Japan's adoption of forward guidance in 2019 underscored its commitment to achieving its inflation target. By clearly communicating its intention to maintain low interest rates and continue monetary accommodation, the bank aimed to anchor long-term inflation expectations and stimulate economic activity.

In the final sections of this paper, we will synthesize the findings and insights presented thus far to draw conclusions regarding the effectiveness of monetary policy in managing inflation. Additionally, we will emphasize the broader implications of

successful inflation management for economic stability and growth.

## 12. CONCLUSION

In this research paper, we have undertaken a comprehensive exploration of the effectiveness of monetary policy as a tool for managing inflation within an economy. Key points and insights gleaned from our analysis highlight the intricate relationship between monetary policy and inflation management.

### Summarizing Key Points

Throughout this study, we have undertaken an in-depth exploration to clarify the intricate pathways through which monetary policy influences inflation. Key concepts, including the quantity theory of money, the dynamics of the Phillips curve, and the importance of managing inflation expectations, have been thoroughly examined. We have also carefully discussed the range of tools that central banks utilize, such as open market operations, reserve requirements, and adjustments in the discount rate, to shape the money supply and impact interest rates.

The analysis draws on historical instances, exemplified by the Volcker era in the United States and stabilization efforts in Brazil and Argentina. These historical examples underscore the effectiveness of monetary policy interventions in guiding inflation. However, challenges arising from time lags, supply-side disruptions, and the limitations posed by the zero lower bound on interest rates have also been explored.

We have also delved into innovative and unconventional measures, particularly focusing on quantitative easing, while assessing their effectiveness and associated risks. Additionally, the study highlights the crucial role of forward guidance and clear communication in shaping enduring inflation expectations as integral components of modern monetary policy strategies.

By considering all these aspects, this comprehensive analysis contributes to a thorough understanding of the complex interplay between monetary policy and the dynamics of inflation.

### Ongoing Importance of Monetary Policy

The research underscores the ongoing significance of monetary policy as a pivotal instrument in maintaining economic stability. The central bank's ability to influence the money supply, interest rates, and inflation expectations can significantly impact consumer behavior, investment decisions, and overall economic performance. As demonstrated by historical examples, effective monetary policy can curb inflation, prevent deflationary spirals, and contribute to fostering sustainable economic growth.

### Acknowledging Challenges and Potential Innovations

However, we have also recognized the challenges and limitations inherent in employing monetary policy to manage inflation. Time lags, supply-side shocks, and the constraints of unconventional policy tools underscore the complexity of this endeavor. Nevertheless, these challenges have spurred innovative approaches, such as forward guidance and unconventional measures like quantitative easing, aimed at

enhancing policy effectiveness.

As we conclude, it becomes evident that while no one-size-fits-all solution exists, a holistic approach integrating monetary policy tools, effective communication strategies, and innovative responses to economic dynamics is essential. The constant evolution of economic conditions and the dynamic interplay of factors necessitate the central bank's vigilance and adaptability in addressing inflationary pressures. By continuously evaluating and refining its toolkit, the central bank can work toward achieving its dual mandate of maintaining stable prices and fostering sustainable economic growth.

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